

TIMBER SALE IMPLEMENTATION MONITORING REPORT

Siskiyou National Forest
FY 1998

I. Executive Summary

The Siskiyou National Forest completed implementation monitoring of nineteen timber sales (seven large sales and twelve small sales) during FY98. The objective was to determine whether the standards and guidelines of the Siskiyou National Forest Land and Resource Management Plan, as amended by the Northwest Forest Plan, are being implemented and resource management goals described in the Forest Plan are being met. This monitoring reviewed 33% of the small and 70% of the large timber sales that have had environmental analysis completed and implemented since the approval of the Northwest Forest Plan in 1994. In addition, we looked at some best management practices and resource management quality objectives.

This monitoring found that the Siskiyou National Forest timber sale program was doing an excellent job at achieving most of the resource management goals and standards and guidelines, particularly:

- ◆ minimizing soil disturbance
- ◆ leaving down, large, coarse woody debris
- ◆ obliterating temporary roads
- ◆ leaving adequate size green tree retention clumps
- ◆ leaving adequate numbers of scattered green trees within regeneration units
- ◆ meeting visual quality objectives
- ◆ treating activity fuels with broadcast burning and also protecting the soil duff layer
- ◆ retaining adequate amounts of snags within harvest units
- ◆ protecting sensitive plant populations
- ◆ completing all applicable analysis and documentation
- ◆ achieving stand level silvicultural prescriptions.

However, there are some standards and guidelines or resource management goals that are inconsistently accomplished or need improvement. Areas identified as needing some improvement were:

- ◆ Documenting and accomplishing road management objectives
- ◆ Leaving adequate widths of riparian buffers or documenting interdisciplinary team changes to defaults identified in the NW Forest Plan
- ◆ Leaving adequate size trees within green tree retention clumps and as scattered green trees within harvest units. The trees left were not always the "largest, oldest living trees" (ROD C-42)
- ◆ Providing effective, long term drainage control with waterbars
- ◆ Avoiding excessive mechanical damage in thinnings
- ◆ Reducing or preventing bull thistle encroachment within disturbed areas
- ◆ Improving reforestation success
- ◆ Elimination of all trash from project areas
- ◆ Completing all documentation for small projects

Overall, the Siskiyou National Forest is doing an excellent and consistent job in achieving a large majority of applicable standards and guidelines.

II. Introduction

During FY98, the Siskiyou National Forest conducted timber sale implementation monitoring on a sample of various types of sales that had been designed and analyzed following NEPA, and implemented using the standards and guidelines in the NORTHWEST FOREST PLAN (NWFP) of 1994. The objective was to determine if we were implementing these sales according to the requirements of the Siskiyou National Forest Plan as amended by the NWFP. A variety of sale types were sampled including small and large green sales, salvage sales, green firewood sales, and sales in various management allocations. Sampling was designed to test implementation in these various types of sales.

We decided to install permanent plots in some of the units to be surveyed in order to provide an opportunity to complete effectiveness monitoring of these same areas at some time in the future. Revisiting the same plots will help us gauge the magnitude and nature of changes that take place over time. Many facets of natural resource impacts do not become evident for many years after an activity has taken place. Increases in tree blowdown, changes in vegetation, changes in soil stability or water drainage, or accomplishment of the desired tree component are all examples of changes which cannot always be gauged immediately after a timber sale is completed.

Not every Forest Plan standard and guideline that could apply to each sale was surveyed. Each sale was individually considered as to what types of issues should be evaluated. In many cases, there were common issue 'threads' between various sales, such as silvicultural prescription implementation, riparian buffers, coarse woody debris or soil disturbance. Many of these issues were repetitively reviewed on a majority of the sales. Problems were encountered in reviewing certain issues because frequently the activities associated with them had not been completed (i.e. underburning), the sales sampled did not have any activities that would impact a particular standard or guideline, or the time, money or personnel were not available to complete such a review in enough detail to provide useful information.

Every sale was checked to make sure the following requirements were met:

- ◆ Environmental Analysis requirements and implementation of required mitigation measures.
- ◆ Late Successional Reserve Assessments
- ◆ Silvicultural prescription requirements

All of the standards and guidelines were considered for review and were looked at where applicable. The following standards and guidelines, however, are those that were frequently reviewed. The number identified in the Siskiyou National Forest standards are the standard and guideline as identified in that plan. For the Northwest Forest Plan, the number identifies the page number where standards and guidelines are discussed.

A Siskiyou National Forest Plan Standards

- i Forest-wide S & G 2-1: *visual quality objectives*
- ii Forest-wide S & G 3-10: *mitigation for protection of cultural resources*
- iii Forest-wide S & G 4-13a: *wildlife tree (snag) habitat*
- iv Forest-wide S & G 4-13b: *dead and down woody material (including recent supplement)*
- v Forest-wide S & G 6-2: *timber harvest and land suitability*
- vi Forest-wide S & G 6-11: *minimum timber utilization standards*
- vii Forest-wide S & G 6-13: *management activities in hardwood stands*
- viii Forest-wide S & G 7-2: *detrimental soil conditions*
- ix Forest-wide S & G 7-3: *temporary road rehabilitation*
- x Forest-wide S & G 7-4: *soil erosion*
- xi Forest-wide S & G 7-6: *soil erosion mitigation*
- xii Forest-wide S & G 7-8: *large woody material (including recent supplement)*
- xiii Forest-wide S & G 7-15: *watershed analysis*

- xiv Forest-wide S & G 11-2: *road construction and reconstruction*
- xv Forest-wide S & G 11-3: *temporary roads*
- xvi Forest-wide S & G 11-5: *road maintenance*
- xvii Forest-wide S & G 12-2: *activity fuel fire hazard*
- xviii MA14-1: *visual quality objectives*
- xix MA14-3: *intensive timber management*
- xx MA14-4: *moderate timber management*
- xxi MA14-5: *extensive timber management*

B Northwest Forest Plan standards

- i B-11: *Aquatic Conservation Strategy (ACS) objectives*
- ii B-13: *riparian reserve widths, watershed analysis*
- iii B-14-16: *riparian reserve widths, intermittent streams*
- iv B-16-17: *wetlands*
- v B-17: *ACS for riparian reserves*
- vi B-19-20: *ACS for Key watersheds*
- vii B-30: *ACS for watershed analysis*
- viii C-11-21: *standards and guidelines for LSR's; management assessment for LSR*
- ix C-30-31: *riparian reserve widths*
- x C-31-38: *riparian reserve standards and guidelines*
- xi C-39-48: *matrix standards and guidelines*

C Management Issues or other concerns

- i *NEPA Analysis and documentation*
- ii *Late Successional Reserve Assessment*
- iii *Regional Ecosystem Office review recommendations*
- iv *Silvicultural prescription preparation and accomplishment*
 - *Tree species composition, density, damage, quality, windthrow, etc.*
- v *Road revegetation success*
- vi *Road decompaction*
- vii *Fire severity (broadcast or underburn)*
 - *green tree mortality, unit plantability, slash pile disposal*
- viii *Road drainage control*
- ix *Road closures*
- x *Road management objectives*
- xi *Control of Port Orford-cedar root disease*
- xii *Sensitive, endangered, or threatened plant protection*
- xiii *Garbage or debris left on site*
- xiv *Noxious weeds*

III. Sale Sampling Strategy (See Appendix A)

IV. Timber Sales Potentially Available for Monitoring (See Appendix B)

V. Timber Sales Selected for Monitoring (See Appendix C)

VI. Examples of Types of Information that Could Be Collected (See Appendix D)

VI. Plot Sampling Methodology (See Appendix E)

VII. Summary of Results

Chetco Ranger District

A. Sugar F/W

Sale Description/Status

This sale was a commercial firewood harvest of standing hardwoods adjacent to the 1503-038 road. The contractor defaulted after harvesting a portion of the unit and the remainder is being offered for resale. Sale is located in Matrix and is a hand felling and loading operation.

Area(s) Surveyed

No survey was completed because of the default status of this sale.

Summary of Findings

A Categorical Exclusion NEPA document and analysis file was prepared for this project.

Conclusions

Sale achieved applicable NEPA documentation requirements.

B. Nail Gun Salvage

Sale Description/Status

This was a salvage sale of blowdown trees (Unit 1) and standing beetle killed sugar pine (Unit 2). In unit 2, standing green hardwoods were also removed. Both areas were along the 1503-070 road. Sale is located within Matrix. It was harvested by tractor. Sale is closed.

Area(s) Surveyed

Unit #1; Unit #2 (1 plot).

Summary of Findings

- Sale had a silvicultural prescription.
- A NEPA document and analysis file was prepared for this project.
- Gate was open on 070 road. Road is steep and heavily waterbarred.
- Mineral soil exposure was very low within both units (<5%).
- The wetland that was protected adjacent to Unit #1 had no visible signs of vegetation disturbance or removal of snags. Some recent blowdown had added to what is already there.
- No slash found along road prism.
- High levels of slash left in unit #2. Tops and branches of the hardwoods were waist deep in much of the unit.
- Planting sugar pine was apparently attempted but was not very successful as there was a high percentage of dead and dying seedlings. Within the 1 plot taken, 6 of the 7 planted trees were dead.
- There were some large remaining snags within the treated area.
- Road 070 had well constructed waterbars every 100 feet going into unit #2. There was some gullying and rutting occurring on a steep section of road just above the switchback east of unit #2.
- Residual standing basal area/acre for unit 2 was 140 sq ft/acre (120=hardwoods). Average diameter was 15"

(range of 7-52").

- Within Unit 2, down coarse woody debris (>20" x 20') was approximately 360 lineal feet per acre.

Conclusions

- 1 Sale achieved applicable Forest Plan standards and guidelines except that reforestation stocking of Unit 2 may only be achievable at the minimum level (125-150 trees/acre). Poor survival of planted seedlings was due to dense overhead shade from trees and slash. The area is still fully stocked with conifers and hardwoods.
- 2 High levels of slash are left within unit #2. However, the small size of the unit may make treatment not a beneficial activity from a cost or hazard reduction standpoint.
- 3 Down, coarse wood (>20" x 20') exceeds Forest Plan standards.
- 4 Adequate numbers of snags appear to be present to achieve the 2.5 tree/acre Forest Plan minimum standard.
- 5 Mineral soil exposure is very low (<5%) and well under Forest Plan maximum of 15%.
- 6 Waterbars are well constructed and located except for a small area that shows some gulying.

<i>Galice Ranger District</i>

A. Down Soldier

Sale Description/Status

Sale included both shelterwood and overstory removal prescriptions within Matrix land. Sale is closed. Sale was harvested by skyline. Sale originated prior to NWFP but was subsequently modified in order to achieve NWFP standards and guidelines.

Area(s) Surveyed

Unit #2 (overstory removal), existing, unnumbered road near bottom of Unit #2, 2524-737 (and temp roads off this road within unit).

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- 31 sq ft of basal area per acre (range 10-60), or 11-12 trees/acre of standing green trees and snags remains within Unit #2. This material averages 22" in DBH (range of 7-68"). Target was 4 (>20") green trees per acre.
- A number of riparian reserve widths were measured. The reserve width measured from the drainage at bottom (east) of Unit #2 was 126-171 feet. The reserve widths on a couple of small ephemeral and intermittent drainages in SE portion of this unit had buffers from 48-66 feet. Target width at a minimum should have been 150' (one site tree height) unless documented otherwise in environmental analysis or Decision Notice.
- Down, coarse woody debris (>20" x 20') averages 461 lineal feet per acre with an average diameter/piece length of 28"/47'. This material is in decomposition class 3-5 with the majority in class 3.
- There are an average of 39 pieces per acre of down material (>6" x 10') with a total average of 1,084 lineal

feet per acre. This material is in decomposition class 1-5 with the majority in class 3 and 4.

- Snags average approx 3 sq ft of BA/acre with an average of 8" DBH. This is approximately 8-9 trees/acre.
- No green tree retention clumps were located. For this 42 acre unit, there should have been a minimum of 4.41 acres within such clump(s).
- An unnumbered road accessing private land is just east of Unit #2 and within 10 feet of drainage which has extensive representatives of Port-Orford cedar that is apparently uninfected with root disease. Road is open and still accessible. It was not used during sale activities but is within the sale area boundary.
- This same road east of Unit #2 has ongoing surface erosion and gullying on steeper portions. Some gullies are 1-1.5 feet deep. Problems are caused by improper drainage of small drainages that cross road and a lack of waterbars. In some cases, sediment is entering actual stream riparian area.
- Paralleling this same drainage but on other side (east side) is another shorter road that accesses private land, is open to a berm closure as one enters private land, and has no waterbars. This road was used to access unit #1. There is evidence of standing water during periods of the year.
- Temporary roads have been scarified (not deep ripped) and waterbarred. All waterbars are functioning and in good shape.
- Portions of these temporary roads have been planted to conifers.
- Non-conifer revegetation is basically lacking (example 3 plants per 100' of road). Probable reason is poor soil (dry and shale).
- 2524-737 road has been waterbarred and barricaded at it's intersection with the 2524-740 road by post and rail. All waterbars are functioning and in good shape. Still possible to drive around barricade though.
- Unit has been precommercially thinned and weeded/released.
- Mineral soil exposure within unit is <4%.

Conclusions

- 1 Project achieves Forest Plan applicable Forest Plan standards and guidelines except for:
 - a -riparian reserve buffer widths for intermittent or ephemeral drainages or for perennial, non-fish bearing streams were inadequate in places. At a minimum, these widths should have been 150', unless documented otherwise. They ranged from 48-171 feet.
 - b -snag sizes were inadequate. The prescription did not identify a minimum size and number to leave. The Forest Plan standard and guide at that time would have been approx 3 trees/acre greater than or equal to 15 inches in diameter. Note: the existing green trees scattered throughout the unit can provide the opportunity to create such snag habitat..
 - c -green tree retention clumps were not present. No clumps incorporating the largest and oldest specimens were provided. This likely was the result that the shelterwood harvest prescription that obviously preceeded this sale did not provide such. The only alternative would have been to identify such a clump outside the unit. No documentation was found to indicate this had been done.
- 2 Project left 31 sq ft/acre, or 11-12 trees/acre of green and dead standing trees. This exceeded the prescription target of 4 (>20") green trees/acre.
- 3 Down, coarse woody debris ($\geq 20"$ x 20') totalling 461 feet/acre exceeded the objective of 100-400 lineal feet per acre.
- 4 Mineral soil exposure of <4% was significantly under the standard of 15%.

B Finley Overlook

Sale Description/Status

This sale is a combination commercial thinning and group selection treatment within Matrix but within the Shan Creek watershed (Partial Retention). Harvest activities have been completed but sale is not yet closed. This sale was both tractor and skyline harvested.

Area(s) Surveyed

Unit #1 (group selection), Unit #2 (group selection), Unit #3 (temporary road), Unit #4 (commercial thinning), Rd 2706-642, and sale area as viewed from a distance.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.

Unit #1

- 29 trees (>7.0" DBH) were left within a 1.3 acre harvest group (69,2 sq ft/A). The average diameter of these leave trees was 20" DBH (range of 8-52" DBH). 12 were conifers and 17 were hardwoods. 7 trees (snags and green trees) were greater than 20" DBH. The prescription target was to leave 2 large (>20" DBH) per group.
- 6 snags were left (4 conifer, 2 hardwood) with an average DBH of 16.3" (9-28" DBH) and class 3-7.
- 128 lineal feet of down, coarse woody debris ($\geq 20"$ x 20') was left per acre. Target was 100-400 lineal feet/acre.
- There are approximately 80 pieces/acre of down material (>6" x 10'). This totals approximately 1,896 lineal feet per acre.
- Mineral soil exposure is <5%.

Unit #2

- 58 trees (15 conifers and 43 hardwoods) were left within a .52 acre harvest group (280 sq ft/A). The average diameter of leave trees was 16.5" DBH. 10 trees (snags and green trees) were >20" DBH. Target leave trees were 2 trees per group (>20" DBH).
- 3 snags were left with an average diameter of 17.7" (range of 7-38").
- No down, coarse woody material ($\geq 20"$ x 20') was left.
- On a per acre basis, there are approximately 144 pieces of down material (>6" x 10'). This totals approximately 2,512 lineal feet per acre.
- Mineral soil exposure is <3%.

Unit #4

- Thinned to 130 sq ft of basal area/acre (115 sq ft/A= conifer). Target was 120 (with acceptable range of 100-140).
- Snags averaged 10 sq ft/A (8% of BA) with an average diameter of 22" (range of 9-35" DBH).
- Down, coarse woody debris ($\geq 20"$ x 20') averaged 23 lineal feet/acre with an average diameter of 23".
- Down, coarse woody debris ($\geq 16"$ x 16') averaged 98 lineal feet/acre with an average diameter of 20" (range of 18-23"). Target was 120 lineal feet.
- There are approximately 55 pieces/acre of down material (>6" x 10'). This totals approximately 1,183 lineal feet per acre. Smaller material has already been piled.
- Slash piles are too close to some leave trees and trees will likely be scorched or killed during pile burning.
- Mineral soil exposure is <1% in Unit #4.

Other

- Within the 1.1 miles of the new construction (2706-642) there were 25 waterbars. Of these 25 waterbars, 15 (60%) were not properly functioning. The apparent reasons for this was traffic, some were placed at wrong angle, some had no angle to reduce speed of water movement and more were needed within some steeper areas.
- Also within this same 1.1 miles of new construction, there were 9 culverts of which 2 (22%) were partially to almost completely plugged.
- This new construction was entirely a rock surface road. Revegetation on steep cutbacks was spotty but more uniform and thicker on flatter areas. Some cutbank ravelling to road surface from cutbank.
- A temporary road (450' long and 17' wide) going out to the most northern group within Unit #3 was partially obliterated (first 100'-ie sideslope re-established) and was entirely deep ripped. This was accomplished with a hydraulic log loader than 'pinched' chunks of the road to decompact it. Ripping appeared to be deeper than 18 inches. Because of clay type soil and compaction, large clods of soil were created. Some of these clods are 4-12" in diameter.
- A few areas of thistle (bull) were noticed. These areas have 1-10 plants.
- This sale achieved the Partial Retention viewshed objective.

Conclusions

- 1 Project achieves applicable Forest Plan standards and guidelines except for some slash piling in Unit #4 and some road maintenance.
- 2 Some slash piles in Unit #4 are too close to leave trees. Burning these piles will result in killing or damaging adjacent leave trees. The cause of this problem is the specific placement of individual slash piling stakes that require slash piling within a certain distance of the stake, the specifications for piling, and the permissible variation from these requirements. An alternative to correct this problem is to not burn some of these piles.
- 3 The road maintenance items will probably not be corrected prior to closure of the sale because they have already been accepted.
- 4 Other Forest Plan standards and guidelines have not yet been achieved but primarily because this sale is not yet completed and certain proposed activities have yet to be implemented (example= underburning). This falldown is primarily in down, coarse woody debris/acre and down fuels. The coarse wood and fuels issues should be corrected via the planned underburning.
- 5 The silvicultural prescription was achieved in Unit 4 except down, coarse woody debris which was slightly less than the target. This can easily be enhanced prior to or at the time of a regeneration harvest.
- 6 The silvicultural prescription was not achieved in units 1 and 2 because too many trees were left. This can easily be fixed by felling trees after the burn to create down, coarse woody debris or if some of these trees are killed by the prescribed burning.
- 7 The temporary road ripping/obliteration was excellent. It creates small microsites for water and seed collection for revegetation.
- 8 Visual quality management objectives were achieved.
- 9 Planned fuels treatment for site preparation should correct high fuel condition within Units 1,2,3.
- 10 Mineral soil exposure in all units is less than Forest Plan standard and guide of 15%.

C. Waterfall Salvage

Sale Description/Status

This sale was a thinning treatment to reduce inter-tree competition and maintain the ponderosa and sugar pine within this stand. Sale is within Matrix ground within an Adaptive Management Area. Sale is closed. It was tractor harvested.

Area(s) Surveyed

The one unit in this sale was plot surveyed.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease assessment was completed.
- This unit has 80 sq. ft. of basal area remaining (conifers = 60 ft of this amount). Silvicultural prescription specified a residual basal area target of 100 sq ft but permitting a variation from 80-120 sqft/a. The residual trees range from 12-57 inches in diameter with an average of 32 inches. Crown ratios range from 25-60% with an average of 45%. None of the plot trees were snags.
- Coarse woody debris $\geq 20"$ x 20 feet total 5 pieces within the three plots or 173 lineal feet per acre. The average piece was 28" in diameter and 26 feet long. All of this material was in Class 3-5 with the majority in Class 3.
- Coarse woody material not meeting the 20" x 20' standard totaled 22 pieces within all the plots. This material was 6-16 inches in diameter and 10-71 feet long. Of these 22 pieces, 3 (14%) were recent 'blowdowns'. The majority of this material was Class 1-3.
- Average mineral soil disturbance was 38% with a range of 33-40% based on the areas within the three 1/4 acre sample plots. There were 1600 feet of skid trails with an average width of 12 feet.
- Significant amounts of thistle occur in the disturbed areas.
- There is a lot of small slash <6 inches in diameter but it is discontinuous because of the skid trails.
- Waterbars were installed and functioning on the steeper portions of the skid trails.
- Stand openings have been planted with both sugar and ponderosa pine.
- Three trees (11%) of the coarse woody debris within the plots were a result of blowdown.

Conclusions

- 1 Project achieved applicable Forest Plan standards except for:
 - (a) soil disturbance- Mineral soil exposure was excessive at 38% of the area. The Forest Plan standard is $\leq 15\%$.
 - (b) snag management objectives- the target snag objectives were not achieved within the treatment area. However, the prescription did permit this to be achieved within adjacent untreated areas. No survey of these areas was completed.
- 2 The silvicultural prescription objectives were achieved except for snags.
- 3 Blowdown significantly assisted in creating coarse woody material.
- 4 Thistle has significantly occupied disturbed areas.

D. Roadside Salvage

Sale Description/Status

This sale involved the harvest of individual hazard trees along various District roads. These trees were identified as having a potential to fall into the adjacent roads and were therefore considered hazards to the public. All designated trees were cut. Merchantable logs were yarded and removed. All but two treatment areas were within Matrix. The two exceptions were within Late Successional Reserves. This sale is closed. It was harvested from the road.

Area(s) Surveyed

The area surveyed involved 3 portions of Unit 7 within the Water's Creek drainage (Matrix).

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- No silvicultural prescription was found for this project.
- A Port Orford cedar root disease control strategy was completed for this project.
- There is another sale (Water's Thin Salvage) currently operating in same area as was surveyed which made identification of effects of this specific sale difficult.
- There was little evidence of this sale having occurred.
- Slash within road prism or landings was piled/burned. Slash in woods was left in place. Significant slash concentrations in the woods did not occur and that which did occur is not atypical of what naturally occurs. Some unburned portions of slash piles were found on landings.
- There are a few cull logs (all less than 32 feet) remaining on a few landings.
- No damage to leave trees was observed.
- There was little to no evidence of any significant soil disturbance.
- Some chunks of wire cable and individual pieces of garbage were found on landings but it is unclear if these were generated by this sale or another.
- No survey was made to determine if coarse woody debris levels were achieved because of the scattered nature of this harvest (individual trees) and the fact that this was not a regeneration harvest. Even if there was insufficient coarse woody material on ground at this time, there is ample opportunity to create such prior to any future regeneration treatment.

Conclusions

- 1 Sale achieved applicable Forest Plan standards and guidelines except no silvicultural prescription was prepared..
- 2 Cull logs on landings may be source of large wood for stream improvement projects.

E. Firebreak Salvage

Sale Description/Status

This sale involved the removal of old cull decks of logs on landings or along roadsides within Matrix. Sale is closed.

Area(s) Surveyed

The area surveyed included roads 2500-687; 2500-212; 2500-688

Summary of Findings

- An analysis file was prepared for this project.

- There was little to no evidence this sale occurred. Excellent utilization and cleanup.
- In 1.15 miles of rd #2500-687, we found approx 30 waterbars of which 18 (60%) were not currently functioning properly. In .3 miles of road #2500-212 we found 10 waterbars of which 8 (80%) were not properly functioning. These roads are either on or near ridgetop and there is no evidence of water other than rainfall. The primary reasons for these waterbars not functioning appears to be (1) rocky soil where waterbars were bermed rather than cut into ground, (2) poor location, (3) inadequate size, (4) vehicle traffic breaching, or (5) poor outlets. No culverts occur along these roads.
- Revegetation of the landings appears to be slow but there are no erosion problems.
- Landings and roadsides had occasional individual plants of Canada thistle and St. Johnswort.
- There was 1 example of a recent blowdown on 2500-687 that was resulting in people driving cross country to get around tree.

Conclusions

- 1 Sale achieved applicable Forest Plan standards and guidelines.
- 2 Road drainage needs repair.

F. Lone Drone F/W

Sale Description/Status

This sale involved the harvest of standing green hardwoods for firewood. It is located within Matrix and was a tractor sale. Sale is closed.

Area(s) Surveyed

The 1 unit in this sale was surveyed.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- No silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was designed for this project.
- A large amount of thistle was found within the disturbed areas within this 2 acre unit.
- Approximately 8% of this unit had mineral soil exposed by the sale activities. Most of this was within in skid trails of which there were approx 400 lineal feet with an average of 16 feet wide.
- The slash had been piled and burned. All piles were partially burned except one which was unburned.
- There were 2 waterbars on a steep section of a skid trail. 1 was functioning properly. There was no berm on the skid trail into this unit that would prevent further access.
- Revegetation was 20-40% and included bracken fern.
- No erosion was occurring that would move sediment offsite.
- Plastic was used to cover the burn piles and remnants of this material still exist.
- 180 sq ft of basal area per acre was left (of this conifers=160 sq ft/a). Diameters ranged from 11-43" with an average of 23". Both conifers and hardwoods were represented. None of these trees were snags.
- No coarse woody debris that was $\geq 20"$ x 20' was found within two 1/5 ac plots.
- No riparian areas occur within or adjacent to this project.

Conclusions

- 1 Sale achieved applicable Forest Plan standards/guidelines except a silvicultural prescription should have been prepared.

- 2 There appeared to be an unnecessary amount of skid trails even though the sale was within maximum Forest Plan standard of $\leq 15\%$.
- 3 Down coarse woody debris ($>20'' \times 20'$) is lacking but such is not required at time of an intermediate harvest. There is an adequate amount and size of such material standing. This material can provide the opportunity to create such material at the time of any regeneration harvest. The 10 pieces of coarse woody material found within these plots were 6-13" in diameter and 12-64 feet long. This amounts to 648 lineal feet/acre.
- 4 Most all of the piles had been at least partially burned. Use of black plastic to cover piles is probably not a good practice because this material is resistant to decomposition and provides litter in the forest. A waterproof paper is better.
- 5 A large amount of thistle has regenerated on disturbed skid trails.

Gold Beach RD

A. Sprat ThinSale Description/Status

This project was designed to protect and enhance late successional and old growth forest ecosystems by development of old growth forest characteristics and prevention of large scale disturbances that would destroy or limit the ability of reserves to sustain viable species populations. The project would thin, create small canopy gaps and create snags.

Area(s) Surveyed

Of the four units within this sale, none had been completed during the time field surveys were being conducted because of a high fire danger shutdown. This sale was, therefore, not field reviewed.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A Southwest Oregon Late-Successional Reserve Assessment was prepared.
- A watershed analysis was prepared for this project.

Conclusions

- 1 Project achieves applicable documentation requirements.

B. 2-T ThinSale Description/Status

Sale is a commercial thinning within Matrix. Sale is still active. Sale includes both tractor and skyline yarding.

Area(s) Surveyed

Unit #6 (plots); Unit #16

Summary of Findings

- A NEPA document and analysis file was prepared for this project.

- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A watershed analysis was completed.

Unit #6

- Residual basal area is 137 sq ft per acre. Average diameter is 22" (range 10-45"). Average crown ratio was 31% (range 15-60%).
- Down, coarse woody debris ($\geq 20'' \times 20'$) was 0.
- Down, coarse woody debris ($\geq 16'' \times 16'$) was also 0.
- Down, coarse woody debris ($\geq 6'' \times 10'$) was 483 lineal feet/acre with an average diameter of 8" and 14 feet long.
- There is a lot of down material less than 6" x 10'.
- Skyline corridor widths generally were 10-14 feet wide.
- Approximately 20% of the leave trees had mechanical damage. The average amount of damage per tree was slightly less than 1 sq ft.
- Average mineral soil exposure was <3%.

Unit #16

- Riparian reserve buffer widths were measured within this unit. In the western riparian area the buffer width was >200' going straight uphill from top of drainage; to east it was 76-141'. This buffer for the Alder Spring drainage appears to be conservative. The middle riparian area was measured at 176' going from the top of this drainage to NE. The most eastern riparian area was measured at 84' from it's top going to the NE. The potential site tree in this area was less than 150'.

Conclusions

- 1 Project achieves applicable Forest Plan standards.
- 2 Riparian areas in Unit #16 were buffered generally more conservatively than what was required within the silvicultural prescription (ie a minimum of 25-75 feet).
- 3 Down, large coarse woody debris was generally lacking except in material between 6-16" in diameter. Prescription called for leaving existing dead and down woody material. Standing green trees can provide the opportunity to create such material either before or at the time of regeneration harvest.
- 4 The target residual basal area was 140 sq ft/acre. This target was achieved at 138 sqft/acre.
- 5 Leave tree mechanical damage appears to be high at 20% of the leave trees. The fortunate part of this, however, is that the average damage per tree was less than 1 sq ft.

C. Nail Keg Salvage**Sale Description/Status**

This sale was a roadside blowdown sale within a Late Successional Reserve. This sale is closed. Sale was harvested only from road prism.

Area(s) Surveyed

Both areas within this sale were reviewed.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A Late Successional Reserve assessment was completed.
- No visible evidence of disturbance on the roads where material was removed.
- No visible slash along these roads.

Conclusions

- 1 Project achieves applicable Forest Plan standards and guidelines.

D. M & M Vista Salvage**Sale Description/Status**

This sale was a blowdown salvage project within a Late Successional Reserve. Sale is closed. Sale was both tractor and skyline yarded.

Area(s) Surveyed

The one unit in sale was surveyed.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A watershed analysis was completed.
- A Late Successional Reserve assessment was completed.
- Project was reviewed by Regional Ecosystem Office.
- Approximately 110 sqft of basal area/acre was left, The average diameter of this residual stand is 25" (range 18-32").
- The age of this stand was approx. 70-90 years old.
- Down, coarse woody debris ($\geq 20" \times 20'$) was 420 lineal feet/acre. The average log was 23" in diameter and 105' long. Most of this material was in class 1-3 with the majority in class 1.
- Snags were about 10 sq ft of basal area/acre. (9%). The one snag within a plot was 32" in diameter.
- Existing natural regeneration appears adequately stock the site with 0-4.5 foot trees.
- Mineral soil exposure was <1%.
- The 3313-120 road was closed with a berm a short distance from the 3313-100 road intersection. This was a rocked road.
- Skid road in lower part of unit was blocked by a stump.
- Skid roads already have vegetation regrowing within them.

Conclusions

- 1 Project achieves applicable Forest Plan standards and guidelines.
- 2 Down coarse woody debris averaging 420 lineal feet per acre exceeds Forest Plan requirements.
- 3 Forest floor disturbance was minimal and exceeds Forest Plan standards.

<i>Illinois Valley RD</i>

A. Full House

Sale Description/Status

This sale involved both commercial thinning and regeneration harvest activities. It is located within Matrix. This sale is still operating. Eight units were at least partially completed at the time of field survey. Both skyline and tractor harvesting systems are involved.

Area(s) Surveyed

Unit 31 (commercial thin), Unit 32 (CC with reserves)

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A watershed analysis was completed for Althouse drainage.

Unit 32

- The entire unit had been broadcast burned
- The entire unit had been planted with a combination of DF and sugar pine. 75+% of the DF were dead or dying.
- The regeneration was planted with little or no thought given to planting in favorable microsites on this south facing slope.
- The entire unit was tractor yarded.
- There were two green tree retention clumps associated with this unit. The lower clump (.6 ac) was within the unit and the upper clump (1.3 ac) was outside the unit but adjacent to it. The harvest unit was 10 acres in size. The target total size of green tree retention clumps was 1.05 ac. These two clumps are 19% of the area of the harvest unit.
- The **average diameter of the stumps** within the harvested area was 20.9" (range of 7-61"). The **average DBH** of a 1/4 acre plot in both of the two green tree retention clumps was 16.2" (range of 7-42"). Note: The stump diameter of a tree is larger than DBH--generally 1-2 inches larger depending upon the tree.
- The amount of down, coarse woody material (>20" x 20') following burning was 552 lineal feet/acre. The average piece was 32" in diameter and 42 feet long. This material was in class 2-5 with the majority of this material in class 3 and 4.
- The amount of down, coarse woody material (>16" x 20') following burning was 627 lineal feet/acre. The average piece was 30" in diameter and 42 feet long. This material was in class 2-5 with the majority of this material in class 3 and 4. Target was 120 lineal feet per acre.
- Average mineral soil exposure within the unit was <11%.
- The riparian buffer on SE side of the unit was measured at 70' (in upper portion) and 128' in lower portion (along road #4812-573). There was water running through the culvert at the road crossing. The top of this riparian reserve (from which a buffer would be measured) is difficult to determine.
- Port Orford cedar occur within the lower GTR. No evidence of POC root disease.
- The broadcast burn was a low severity burn. It consumed fine fuels, left duff/litter layer intact, killed many standing green trees and left larger size material for down, coarse woody debris.
- Following the burn, the harvested stand contained approx 30 sq ft of basal area per acre. Of this total approximately 17.5 sq ft/acre were snags with an average DBH of 32" (range of 8-54"). The average

diameter of all leave trees was 31" (range of 8-54"). The average diameter of green, leave trees was also 30" DBH. The target for individual scattered leave trees was 10 sq ft/acre.

Unit 31

- This unit was both tractor and skyline harvested.
- Stand was thinned to 153 sq ft of basal area/acre (110 sq ft/A= conifer). Target was 100-120 sq ft/ acre-- apparently for conifers. Prescription was not specific on this point.
- Snags averaged 17 sq ft/A (11% of BA) with an average diameter of 20" (range of 15-36" DBH).
- Down, coarse woody debris ($\geq 20"$ x 20') averaged 106 lineal feet/acre with an average diameter of 25" (range of 20-30"). No target was specified other than to maintain existing down wood.
- Down, coarse woody debris ($\geq 16"$ x 16') averaged 235 lineal feet/acre with an average diameter of 25" (range of 17-30").
- There are approximately 50 pieces/acre of down material ($>6"$ x 10'). This totals approximately 1,128 lineal feet per acre.
- Mineral soil exposure is $<7\%$.
- Two riparian buffer widths were measured along SE portion of this unit. The first buffer reviewed was the drainage just outside the unit to the east. This buffer was measured at 60 feet from it's apparent upper terminus in a NW direction to harvested trees. The second buffer reviewed was the next drainage to west. Harvest activities were 32 feet above riparian management area flagging at the upper terminus of this drainage. Another measurement further down this drainage and measured to the west was 50 feet.

Conclusions

Unit 32

- 1 Project achieves applicable Forest Plan standards and guidelines except:
- 2 -Trees within the green tree retention clumps and those scattered individually throughout the unit generally had smaller average diameters than trees harvested within unit. The largest diameter trees also tended to be within the harvested portion of the unit.
- 3 -The width of the riparian reserve in SE portion of unit at road crossing (128') is narrower than the minimum of 150' or 1 site potential tree for a perennial, non-fish bearing stream (ie at culvert). The width of the riparian buffer near top of this reserve (70') also appears to have been narrower than the required. The standard would be the height of 1 site potential tree or 100' whichever is greater. This is for a intermittent or ephemeral channel or wetlands of <1 ac.
- 4 -Unit is probably not stocked with well-spaced regeneration to the requirements in silvicultural prescription (target of 300 trees/acre) because of the death of most of the planted DF. It may just achieve the minimum of 125 tree/acre. However the four 1/100 acre plots placed in this stand are not sufficient to make this judgement. This problem with the DF dying has been investigated and a number of possible causes have been suggested. However, no definitive answer has been offered.
- 5 -Trees planted within unit were not planted utilizing favorable microsites as was required in the silvicultural prescription.
- 6 This harvest unit has excellent amount of down, coarse woody debris. The amount provided was significantly in excess of the target objective (ie. 627 verses 120) both for material larger than 16" x 20' or 20" x 20'.
- 7 The broadcast burn was excellent. It consumed the target small diameter fuels, created planting spots, left significant amounts of down, large coarse wood material, increased the numbers of standing snags, and

retained the duff and litter layer.

- 8 Overall mineral soil exposure was <11% of the total area. A maximum of 15% is the standard.
- 9 The size of the green tree retention clumps was 81% larger than what was required (1.9+ ac verses a minimum of 1.05).
- 10 The amount of basal area/acre left for green tree retention, snags and future snag replacement trees was significantly in excess of what was specified (30 sqft vs 10 sqft).

Unit 31

- 11 This unit achieved applicable Forest Plan standards and guidelines.
- 12 Stand achieved it's target residual basal area/acre. One minor problem was that prescription was unclear with respect to hardwoods from the standpoint of whether they are or are not included in the basal area/acre target.
- 13 Snag retention was good despite OSHA safety requirements.
- 14 The amount of down, coarse woody debris ($\geq 20'' \times 20'$) was excellent. The silvicultural prescription did not identify a specific amount objective, however. The amount provided, however, provides a great start towards that required at the time of a regeneration harvest.
- 15 Mineral soil exposure was below the Forest standard of 15%.
- 16 The outer edges of the riparian areas were entered for some thinning. No harvest occurred within 50 feet of these drainages. This was planned to occur.
- 17 It was difficult to determine if a particular riparian area was prescribed to be entered. The EA stated that some would be entered with some thinning. The silvicultural prescription did not specify how or to what extent.
- 18 A watershed analysis was prepared prior to entering any riparian reserve for a treatment.

Project accomplished applicable documentation requirements.

B. Bucking Horse

Sale Description/Status

Sale consisted of a combination of commercial thinnings and regeneration harvest within Matrix. Sale is still operating. Only three other units in this sale have been completed.

Area(s) Surveyed

Unit #19 (CC with reserves) was the only unit reviewed.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A watershed analysis was completed.
- The entire unit #19 was broadcast burned.

- Only a small portion of the east side of the unit was planted (sugar pine).
- The entire unit had been skyline yarded.
- There are 1.8 acres within the lower green tree retention clump in NE corner of unit. The total area in this unit is 9 acres. This GTR clump is approx 20% of the unit area. In addition, there is one additional, small GTR clump within this unit. The target for all green tree retention clumps was a minimum of 1.4 acres.
- The **average diameter of the stumps** within the harvested area is 20.8" (range of 7-78"). The **average DBH** of a 1/4 acre plot within the NE green tree retention clump was 14.5" (range of 7-47"). Note: The stump diameter of a tree is larger than DBH--generally 1-2 inches larger depending upon the tree.
- There were 80 individual trees (8.8/acre) (of which 30 trees (3.3/acre) were snags) left scattered throughout the harvested unit prior to burning. The average diameter of these 80 trees was 28" DBH. The average diameter of green trees was 25.5" DBH (range of 10-47). The average diameter of the snags was 32.1" DBH (range of 14-74).
- The amount of down, coarse woody material (>20" x 20') following burning was 885 lineal feet/acre. The average piece was 26" in diameter and 49 feet long. This material was in class 2-5 with the majority of this material in class 3.
- The amount of down, coarse woody material (>16" x 16') following burning was 983 lineal feet/acre. The average piece was 25" in diameter and 44 feet long. This material was in class 2-5 with the majority of this material in class 3. Target was 120 lineal feet per acre.
- Average mineral soil exposure within the unit was <3%.
- The riparian buffer on west side of unit was measured at 216'. We discovered a small seep on west side of unit approximately 66 feet inside the unit boundary from west edge of unit. Water was coming out of ground within the 'root well' of a blowdown tree. No riparian reserve buffer was around this tree. It may have blown down after sale implementation. No target buffer width was identified except 1 site potential tree or 150' (whichever was greater). Based on our measurements, a site potential tree would be 180-200 feet.
- Port Orford cedar were cut within a narrow strip below road # 4613-988. There were a few POC along edge of road that have not been cut and are still green. These are actually within the road prism.
- The broadcast burn was a low severity burn. It consumed fine fuels, left duff/litter layer intact, killed some standing green trees and left larger size material for down, coarse woody debris.
- Following burning, the harvested stand contained approx 45 sq ft of basal area per acre. Of this total approximately 15 sq ft/acre were snags with an average DBH of 37" (range of 16-63"). The average diameter of all leave trees was 35" (range of 16-63"). The average diameter of green, leave trees was also 35" DBH. The target for individual scattered leave trees was 14 sq ft/acre.
- On the basis of 4 variable radius plots, approximately 25% of the green leave trees exhibited mechanical damage from the harvest operation. On the average damaged tree, approximately 1.7 sq ft of the bark and cambium were removed.

Conclusions

Project achieves applicable Forest Plan standards and guidelines except:

- 1 -Trees within the green tree retention clumps and those scattered individually throughout the unit generally had smaller average diameters than trees harvested within unit. The largest diameter trees also tended to be within the harvested portion of the unit.
- 2 -All POC trees were not removed from the treatment strip below road #4613-988. A few were missed within the road prism.
- 3 -A small seep/spring was found within the harvested area. If this spring was missed during layout this

would have been a non-attainment of the riparian standard of a 50' buffer for this type of riparian area for this sale. However, if this seep was created by the blowdown tree near it after implementation of this project, it would not be a none attainment of such a standard/guide.

- 4 This harvest unit had excellent amount of down, coarse woody debris. The amount provided was significantly in excess of the target objective (ie. 983 verses 120) both for material larger than 16" x 20' or 20" x 20'.
- 5 The broadcast burn was excellent. It consumed the target small diameter fuels, created planting spots, left significant amounts of down, large coarse wood material, increased the numbers of standing snags, and retained the duff and litter layer.
- 6 Overall mineral soil exposure was <3% of the total area. A maximum of 15% is the standard.
- 7 The size of the green tree retention clumps was over 85% larger than what was required (1.8+ ac verses a minimum of .95 ac).
- 8 The width of the riparian buffer for the drainage west of the unit was greater than what was required (216 ft vs 180-200 ft)
- 9 The amount of basal area/acre left for green tree retention, snags and future snag replacement trees was significantly in excess of what was required (45 sqft vs 14 sqft).

C. French Salvage

Sale Description/Status

Sale involved scattered areas of individual tree blowdown. Sale occurred in Matrix, Riparian Reserves, and Partial Retention.

Area(s) Surveyed

4703-018, 4703-051, 4703-435, and 4703-440.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A watershed analysis was completed.
- Little evidence of sale activity. It is necessary to seriously look for evidence of this sale.
- Fuels either piled if on road or left in woods where tree fell.
- Within riparian areas, only trees that fell into or onto road were removed. Significant amounts of down, coarse woody debris have been added to riparian reserves where this blowdown occurred.

Conclusions

- 1 Sale achieved applicable Forest Plan standards and guidelines.
- 2 Fuels are within acceptable limits.
- 3 Riparian areas retain increased amount of blowdown material because only that material that fell into or onto the road was harvested.

- 4 No visual quality impairment.

D. Caves Pickup Salvage

Sale Description/Status

This sale involved the sale of decked logs along a couple of forest roads.

Area(s) Surveyed

All 5 deck locations were reviewed.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A watershed analysis was completed.
- No visible evidence of any harvest activity.
- No slash
- No damage to standing, green trees.

Conclusions

Sale meets applicable Forest Plan standards and guidelines.

Powers RD

A. Doe Swamp Thin

Sale Description/Status

This project is a commercial thinning within three units located within Matrix. The sale is still active. The sale was harvested using skyline and tractor yarding systems.

Area(s) Surveyed

Unit #15 (thin)

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A silvicultural prescription was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A watershed analysis was completed.
- The leave tree basal area was 160 sqft/acre. The average diameter was 18" (range 9-44). Average crown ratio was 23% (range 10-40). Based on the average diameter of leave trees, the average number of trees left is approximately 91 trees/acre (approx 22 foot spacing). The target spacing was 18 feet (acceptable range 13.5- 22.5 feet) or 160 sq ft of basal area.
- Snags accounted for 17 sq ft of the leave basal area/acre (10%). They had an average diameter of 24" (range 10-44"). For this average diameter of snag, this approximates 5+ snags per acre. All the measured snags were either class 3 or 6.
- Down, coarse woody debris ($\geq 20"$ x 20') was 1,306 lineal feet per acre in 30 pieces. Average diameter was 30.3' (range 20-63"). Average length was 44' (range 20-120'). Decomposition classes were 3-5 with the majority in class 3.
- Down, coarse woody debris ($\geq 16"$ x 16') was 1,412 lineal feet per acre. Average diameter was 29" (range

18-63). Average length was 40' (range 16-120'). Same decomposition classes and majority as above.

- 33% of the leave trees had mechanical damage. The average damaged tree had 1.2 sq ft of bark/cambium removed.
- Mineral soil exposure was <1%.
- Port Orford cedar root disease was not seen within stand although POC occurs throughout. POC root rot is present along road near top of unit.
- Riparian reserve widths were measured along the eastern edge of Unit #18. There is a section of the riparian area where there is no surface water or defined channel--water is underground. It is just below a section of channel that has bedrock exposed. Both above and below this location there is a defined channel and surface water. At one point within this generally flat area, unit #18 dips to within 15' of this drainage. Just below and above this location, the buffer is 81' and 57' respectively.
- Riparian widths were also measured to Unit #15 within the same drainage as above. We started in the same location as the measurements to Unit #18. From this point and moving upstream the measurements were 102', 102', 106', 101, 81', 75'.
- Riparian reserve widths were also measured along the most northern edge of Unit #15. The buffer width there was 135' from a intermittent/ephemeral channel.
- Within this drainage near bottom of Unit #15, there is a tremendous amount of old, down, large trees that cover the drainage and effectively obscure the drainage.
- Within Unit #15, the harvest occurred around the headwall of an old slump that had a small spring (seep) within it. This site is approx 491' from the plot reference tree along the road near the western edge of the unit.
- Approximately 810 feet of an average 14 foot wide, temporary road at the top of Unit #15 was deep ripped and barricaded with a soil berm. This road was obliterated using a log loader to 'pinch' the road surface to decompact it. The road surface is very irregular and has a lot of excellent microsites for revegetation establishment as well as water collection/infiltration.
- A few huge slash piles exist along the ripped temporary road along top of this unit. There is a large amount of DF firewood within these piles. This material is not accessible for firewood cutters because the temporary road was obliterated by the purchaser, none of this material was sorted from other slash, and there is a concern about firewood cutters and effective POC root disease control. As a result, these piles are scheduled to be burned.
- There were partially empty waterjugs and other trash left throughout unit by purchaser's employees.

Conclusions

- 1 This project achieves applicable Forest Plan standards and guidelines with the following exceptions:
 - a Riparian reserve buffers within 100' of a stream were entered with harvest. This is contrary to the EA.
 - b A small seep and slump (including headwall) in SW part of unit #15 was not buffered.
 - c Leave tree mechanical damage appears excessive at 33% of the leave trees.
 - d Trash was left by purchaser's employees throughout the unit. This is unacceptable.
- 2 Residual stand basal area is exactly 'on target'.
- 3 Down, large coarse woody debris ($\geq 20'' \times 20'$) was 1,306 lineal feet which is over 5x the Forest Plan standard of 240 lineal feet. It even exceeds the high end of number of pieces/acre of 27.
- 4 Snags appear to exceed Forest Plan standards of 2.5 per acre within larger diameter classes.
- 5 Temporary road decompaction/obliteration appears excellent.
- 6 Mineral soil exposure within the unit was <1% which is significantly below the maximum Forest Plan standard of 15%.

- 7 A watershed analysis was prepared prior to entering any riparian reserve for a treatment.

B. Sweet Pea Salvage

Sale Description/Status

This project was involved the removal of potential roadside hazard trees as well as salvaging some scattered dead and dying Port Orford cedar. Project is completed. Project occurred within Matrix and Riparian Reserves.

Area(s) Surveyed

Area 5; Part of Area 3

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- A watershed analysis was completed.
- Little evidence this sale occurred except a few chunks of cull wood and a few slash piles.
- Road # 3363-170 was inaccessible due to a culvert removal at the West Fork of China Creek crossing. Road was waterbarred on steeper portions.

Conclusions

- 1 Project achieves applicable Forest Plan standards.
- 2 Little visible evidence this sale occurred.

C. CG Hazard

Sale Description/Status

This project was a hazard tree removal within various campgrounds. This sale is closed.

Area(s) Surveyed

Eden Valley CG; Wooden Rock CG; Buck Creek CG; Daphne Grove CG.

Summary of Findings

- A NEPA document and analysis file was prepared for this project.
- A Port Orford cedar root disease control strategy was developed.
- One tree was felled across a small drainage in Buck Creek CG. All except the broken top (10') was removed with no ground or vegetation damage. Top was left within S.F of Coquille drainage.
- A sensitive plant population in Daphne Grove CG was to be protected during this project. This project was carried out according to the identified protection requirements. This population, therefore, sustained little or no damage from this activity.
- Residual tree damage was minimal.
- Slash cleanup was generally excellent and all piles were burned.
- In Buck Creek CG, a green, 8" diameter tree with a rotten butt (obvious hazard tree) within 6 feet of two hazard trees that were felled was not designated to be removed.

Conclusions

- 1 Project achieved applicable Forest Plan standards.
- 2 Excellent cleanup

- 3 Excellent felling with minimal damage to leave trees.
- 4 Excellent protection of a sensitive plant population.

VIII. Monitoring Problems/Suggested Solutions

Riparian Reserves

Problem: Inconsistent identification of the riparian reserve width for a specific unit within sale documentation.

There has been inconsistent identification of the riparian reserve widths for specific units in Siskiyou NF timber sales. Without this information, it is not possible to consistently and accurately determine if a post treatment riparian reserve width was intended or a mistake---particularly if site potential trees were used to determine buffer width.

Suggested Solution: Identify in the silvicultural prescription the reserve width or the range of widths that are acceptable for a specific unit. **Who: Silviculturist on project after consultation with IDT.**

Problem: Re-identifying the top of a riparian reserve in the field after treatment has been completed. This is the point from which the buffer width would be measured.

Locating riparian reserve boundaries along free-flowing perennial streams is generally easy because of the presence of readily identifiable features from which to measure. Any two people may slightly disagree on where to begin measurement along the stream but such disagreement would likely only result in a difference of a few feet. However, when dealing with intermittent or ephemeral streams, there is much more room for disagreement between hydrology specialists as to where such drainages have a **definable channel and evidence of annual scour or deposition**. The point at which the stream does not meet this criteria is important in determining the riparian reserve buffer above it. Resource specialists can frequently disagree by 10's or 100's of feet on such a point especially when water intermittently flows both on the surface and subsurface or where there is a disagreement of whether the flow is annual or periodic. Unless this point is either permanently identified in the field or the person who identified this point relocates it prior to any post sale monitoring, a person making after-the-fact measurements to determine compliance with the NWFP is prone to identify a different point. This could result in an incorrect conclusion of whether the riparian reserve width was or was not properly identified.

Suggested Solution: Field identify and monument (paint, stakes, flagging, etc) the point where the drainage does not have a definable channel and evidence of annual scour or deposition prior to the activity occurring. This would provide an opportunity to monitor compliance with the NWFP as well as monitor any changes that may occur over time with respect to such a transition point---ie does this point change location after the treatment? How far? How long? **Who: IDT on project.**

IX. Summary

Following is a summary of those things which the Siskiyou National Forest appears to be doing well/not so well in it's timber sale program, particularly with respect toward implementation of the Siskiyou Forest Plan as amended by the Northwest Forest Plan.

'Good Job' Areas*Forest Plan Standards and Guidelines*

- Activity caused mineral soil exposure was generally significantly less than the most constraining Forest Plan standard of 15%.
- The type and amount of down, coarse woody debris left after project activities was excellent and frequently exceeded Forest Plan standards by a significant amount.
- Obliteration of temporary roads was exceptional particularly when it was done with a loader 'pinching' the road to decompact and scarify. This procedure appears to decompact deeper than normal deep ripping and creates microsites that will trap both water and seed.
- The size of the green tree retention clumps was excellent and significantly larger (>80%) than the minimum area required.
- The number of scattered, green trees left within regeneration units normally exceeds that which is required in the Forest Plan.
- Project visual quality objectives are being achieved. In addition, both blowdown salvage and hazard tree removal projects are accomplished such that the casual observer would not generally notice their having been accomplished.
- The quality of broadcast burning for fuels treatment and site preparation was excellent. Little of the duff layer was consumed but target fuels were eliminated. Down, large woody debris remaining after treatment was greater than required.
- Snag retention was usually good particularly considering the difficulty of achieving this goal while protecting human life and meeting OSHA requirements. The primary methodology to preserve such ecosystem components is to include them in green tree retention clumps in regeneration areas, clump them with leave trees or create them after the treatment. Consistently, the purchaser (in consultation with the sale administrator) makes the final call of whether the snag is a hazard.
- Protection of sensitive plant populations was only reviewed in one project but these plants were protected without any damage to the population despite adjacent activity.

'Other' Issues

- Project documentation was generally excellent even though the level of detail varied significantly from project to project and District to District. Required documentation to implement a project was normally completed with few exceptions.
- The consistency and accuracy of how well the post treatment stand matched the target stand was amazing. Considering the diversity and the varied skill level of the personnel who mark these projects, this accomplishment is particularly noteworthy.

'Improvement Needed' Areas*Forest Plan Standards and Guidelines*

- Identification of riparian reserve buffers is occasionally a problem. In a number of cases, prescribed reserve

widths were not implemented in the field. This problem has a number of possible causes such as an inadequate number of measurements taken, inaccurate measurements, sinuosity of stream channel, edge of stream channel is vague, description of riparian reserve widths in documentation is different than what was done in field, poorly defined upper terminus for ephemeral/intermittent streams, lack of knowledge of whether the potential site tree is greater than standard buffer, etc.

- The average diameter and maximum size of leave trees within green tree retention clumps are generally significantly smaller than the trees that were cut within the harvest unit. This problem primarily appears to be a result of trying to place the GTR in a location that least impacts the harvest and post sale activities in the harvest unit. .
- The largest of the scattered, green, leave trees within regeneration units tend to be smaller than some of those harvested.
- Road drainage using waterbars is an occasional problem. The primary issues are poor construction methods, insufficient size, improper drainage, improper placement or alignment, insufficient numbers, and traffic without maintenance.

Other Issues

- Road Management Objectives (RMO's) are not always clearly identified for all timber sale projects and this can lead to problems with respect to how timber sale roads are treated at the time of closure. Example: Small waterbars put into a road used in a timber sale when the RMO's specify that use should be discouraged.
- Excessive leave tree damage in thinnings is an apparent problem. The frequency of damaged trees is more of an issue than the amount of damage per tree. This issue has both positive and negative aspects. On one hand, the basic thinning objective is to increase the diameter growth rate of leave trees. Damage to the cambium results in the tree not having it's best chance of growing well and also provides an opportunity for disease/insect damage. On the other hand, damaged trees provide an opportunity for these disease mechanisms to introduce various decays into the tree which potentially increases the opportunity for snags or down woody debris.
- Thistle (bull) frequently quickly occupies tractor skid trails, particularly on the eastside.
- Reforestation success was poor within the few units reviewed. The primary causes appeared to be poor quality trees, improper planting, and poor planting site selection.
- There is a tendency for small projects to not have a silvicultural prescription. The primary types of activities where this appeared to occur was roadside salvages or green firewood harvest.
- Trash left on landings and within the unit by the purchaser's employees was frequently found. This material varied from water and oil jugs to candy bar wrappers to lengths of cable to plastic covering piles.

X. Recommendations

Overall, we were very impressed with how the Siskiyou National Forest is implementing the standards and guidelines of Siskiyou Forest Plan (as ammended by the Northwest Forest Plan). Considering the increasing complexity of ecosystem management and the plethora of issues that must be dealt with in analysis and

implementation of any project, these monitoring results demonstrate that the Siskiyou NF is up to the task despite the few problem areas that were identified. None of the specific problems we discovered are of so much concern that remedial action at that site needs to be initiated. No problem on any given sale was so serious that a significant impact to any resource is likely. In fact, we doubt that there will even be quantifiable, localized impacts. Below are some suggestions which could improve our management and ability to monitor.

- 1 Include Road Management Objectives (RMO's) in NEPA documentation and in the timber sale contract for easy reference to insure that road closure timing and maintenance quality are followed.
- 2 Document clearly in the NEPA files the prescribed riparian buffer width. Include this information in the silvicultural prescription with a large scale map identifying buffer locations. Individuals or teams that make the recommendation on riparian buffer width need to include maps, date of field visit, and describe the factors involved which lead to the buffer width determination in the analysis file. Stream flows vary by season and by year. Including dates and description will help support original decisions on buffer widths. IDT needs to monitor implementation during layout.
- 3 Locate green tree retention clumps in areas which contain some of the oldest and largest live trees, decadent trees, and large snags. Work with layout personnel to verify placement of retention clumps. Identify on large scale unit map mentioned above. Identify marking of "largest, oldest living trees" for retention throughout unit in silvicultural prescription. Silviculturist monitor implementation of marking.
- 4 Need maintenance on steep, open roads with lots of waterbars if they are to remain open. Consider closing roads which have a number of waterbars present for erosion control. Repeated driving across these erosion control structures diminishes their effectiveness. Inspect construction of waterbars closely. Have engineers flag placement and alignment of waterbars.
- 5 Have the Southwest Oregon Insect and Disease Center inspect the permanent plots established with this monitoring effort to gauge the long term impacts of basal scarring on tree within commercial thinning units. They have expressed an interest in this type of study on a variety of sites and plant associations. The plots set up with this monitoring are ideal for their purpose.
- 6 Inspect logging sites for debris or litter prior to the operator moving out of an area. Require them to clean up litter and debris.
- 7 Siskiyou National Forest resource specialists and land managers review the information contained within this report and use it to help them do their future job of ecosystem management even better than they have done to date.
- 8 Despite the fact that we identified some problem areas, the Forest should be proud that the list of 'good job' areas is significantly longer than the list of 'improvement needed' areas. In addition, these 'good job' areas were consistently achieved. On the other hand, the 'improvement needed' areas were occasional problems rather than consistent problems. There is no question that Siskiyou National Forest personnel should be commended for the exceptional job they are doing with the complex and difficult job of managing ecosystems.
- 9 Timing of logging in thinnings is very important. Operate after sap has ceased flowing in summer, fall, or winter. Other requirements, however, are limiting timing of operations. This issue may be difficult to overcome.
- 10 Seed skid roads and disturbed areas with other vegetation (native grasses) which will occupy the disturbed ground quickly and deter establishment of bull thistle or other noxious weeds. Reforest quickly. Eliminate

sources of noxious weed seed.

11 All vegetation management activities should have such a silvicultural prescription, including small sales.

Don Bellville
Certified Silviculturist

Don Rose
Forest Monitoring Coordinator

APPENDIX A

Methodology to Select Timber Sales to Monitor

- 1 Only projects that have been planned (ie. NEPA decision) and implemented under the S & G's of the Northwest Forest Plan will be considered for this monitoring. For purposes of this analysis, the sale should have a decision notice signed after October 1, 1994 or should have been modified to achieve NWFP standards and guidelines.
- 2 From the list of projects in #1, we propose to divide them into three categories -Special Forest Product; Stewardship; or Commodity. These mirror Forest accomplishment reporting categories.
- 3 From the list of projects in #2, we plan to further divide them into 'types of projects' that more specifically identify the nature or purpose of the project such as:
 - a timber (T)- projects primarily designed to provide wood products,
 - b forest health (FH)- various types of projects to improve forest health,
 - c Late Successional Reserves (LSR)- projects designed to benefit this management area,
 - d miscellaneous (M)- projects designed to benefit specific resources or correct hazardous situations; or
 - e other (O)- projects not falling into any of the previous categories.
- 4 From the list of projects in #3, we plan to randomly select 1-2 large sales and 2-5 small sales from each 'type of project' category for each Ranger District.
- 5 Within the list of projects in #4, we plan to select an assortment of types of harvest treatment units (thinning, regeneration, salvage, etc) and the type of activities or information to collect. We will select the type of information to collect based on the nature of the activities within a given timber sale and whether these activities have been completed. The information collection methodology for collecting will range from simple observation to plot sampling. At least 10% of the units in a sale will be reviewed.

APPENDIX B**NWFP MONITORING- SALE LIST (FY98)**

Following is the list of sales that appear to meet the criteria of being planned (ie NEPA) and implemented (at least partially) under the Northwest Forest Plan. From this sale list, we will select those sale candidates for monitoring. The ----- line indicates a suggested cutoff. Sales below this line are either unstated or too small to worry about.

District	Sale Name	NEPA Decision.	Award Date	Type of Project	Units Completed
Chetco	Haze F/W	9/30/93	04/24/98	COMM-T	Done Standing Mad F/W
"	Prospect F/W	8/17/94	11/ 5/96	COMM-T	Done "
"	Butte #1 C/U F/W	4/14/95	6/28/95	COMM-T	Done "
"	Butte #2 C/U F/W	4/14/95	6/28/95	COMM-T	Done "
"	Sugar C/U F/W	4/14/95	7/25/95	COMM-T	Done "
"	Hazel Pistol #1 F/W	9/30/93	6/28/95	COMM-T	Done "
"	Machine Gun Salvage	1/26/96	5/29/96	STEW-FH	Done-itm blwdwn
"	Nail Gun Salvage	8/11/95	5/29/96	COMM-M	Done -Rd blwdwn
"	Loban Salvage	6/ 7/96	7/26/96	COMM-M	Done -Rd blwdwn
"	Blow Gun Salvage	6/14/96	9/ 6/96	COMM-M	Done -Rd blwdwn
"	Low Mdw	7/12/96	9/23/97	STEW-M	No log yet;land blt.
"	Red Bone	5/10/91	12/17/96	COMM-T	No log yet;rd reconst
"	Upper Chetco 95	7/12/96	8/26/96		No start yet
"	Hazel Pistol #2 F/W	9/30/93	6/28/95		No start yet
"	Upper Pistol	7/12/95	10/13/95		(not NWFP)
Galice	Waters Thin Salvage	11/ 9/95	5/14/97	STEW-FH	In progress
"	Big Pine Density	8/15/95	10/19/95	STEW-FH	Done
"	Finley Overlook	10/12/95	10/ 7/96	COMM-T	Done
"	Roadside Salvage	12/20/94	3/10/95	COMM-M	Done
"	Taylor Hazard	8/ 1/97	9/30/97	STEW-M	Done
"	Onion Rattle F/W	4/23/95	6/28/95	STEW-M	Done
"	Lone Drone F/W	4/24/95	6/22/95	STEW-M	Done
"	No Tears F/W	8/25/95	10/23/95	STEW-FH	Done
"	Down Soldier	4/21/92	7/13/95	COMM-O	Done
"	Waterfall Salvage	11/ 9/95	10/ 7/96	COMM-T	Done
"	Firebreak Salvage	7/25/95	10/ 5/95	STEW-FH	Done- deck
"	Drop Salvage	7/25/95	10/ 5/95	STEW-FH	Done -down logs
"	Everclear	4/16/92	1/10/97	COMM-T	No log yet; Rd work
"	Taylor Fir	4/20/95	7/18/95		Done- 1 tree
"	Shan Fir	8/10/95	8/11/95		Done-1 tree
"	Taylor Cedar	4/16/95	5/ 2/95		Done-1 tree
"	Brown Tree	8/10/95	8/25/95		Done-1 tree
Gold Beach	2-T Thin	4/26/96	6/20/96	STEW-FH	In Progress
"	Sprat Thin	8/19/96	12/17/96	STEW-LSR	In progress
"	M & M Vista Salvage	3/ 8/96	6/26/96	STEW-FH	Done-Rd blwdwn
"	Ditto Salvage	5/21/96	8/22/96	STEW-FH	Done-Rd blwdwn
"	MCCool Salvage	5/ 6/96	7/31/96	COMM-M	Done-Rd blwdwn/haz(pvt)
"	Nail Keg Salvage	11/ 4/94	3/16/95	COMM-M	Done-Rd blwdwn Nwfp?
"	North Thin	6/30/94	1/ 3/95	COMM-T	Done-NWFP?

"	Lunar Salvage	5/31/96	7/31/96		No start yet
"	Shasta Costa Thin	7/23/96	1/16/97		No start yet
"	Pebble Lake Boughs	5/28/98			No start yet
"	Ridge Boughs	5/28/98			No start yet
"	Saddle Mtn Boughs	5/28/98			No start yet
"	Brushy Woods Salvage	8/13/96	10/10/96		FS bought back
I.Valley	Bucking Horse	9/25/96	12/23/96	COMM-T STEW-FH STEW-M	In progress
"	Full House	11/ 8/96	1/16/97	COMM-T STEW-FH STEW-M	In progress
"	Bucks Whiskers			COMM-T	Done-
"	Happy Hazard	6/23/95	10/ 4/95	STEW-M	Done- haz trees
"	Caves Hazard	6/23/95	10/ 4/95	STEW-M	Done- haz trees
"	Upper Compound	1/15/96	2/16/96	STEW-M	Done- haz trees
"	Lower Compound	2/15/95	2/28/95	STEW-M	Done- haz trees
"	Six Salvage	5/11/96	6/25/96	STEW-FH	Done- Rd blwdwn
"	Dunn Salvage	5/11/96	6/25/96	STEW-FH	Done- Rd blwdwn
"	Gray Salvage	5/11/96	6/25/96	STEW-FH	Done- Rd blwdwn
"	French Salvage	5/11/96	6/25/96	STEW-FH	Done- Rd blwdwn
"	Sucker Salvage	5/11/96	6/25/96	STEW-FH	Done- Rd blwdwn
"	Jubilee Mine	6/ 1/96	5/19/97	STEW-M	Done- Mining claim trees
"	Caves Pick Up Salv	2/15/95	2/28/95	STEW-M	Done-CG haz trees
"	Wood Stop	2/10/97	3/ 3/97	STEW-FH	Done- 6-8 landing trees
"	Cave Deck	10/ 2/97	1/ 6/98	STEW-M	Done- 1 deck
"	Old Glory Deck	6/ 1/95	7/11/95	STEW-M	Done- log deck
"	Dunn Bridge	11/ 9/96	12/23/96		Done- 2 green trees
"	Down Dunn	12/ 2/96	2/ 3/97		Done- 2 blwdwn trees
"	Page Theft	11/15/95	1/19/96		Done- 1 tree
"	Buckhorn Ridge	1/16/96	5/14/96		Done- PAC Reviewed
Powers	Doe Swamp Thin	6/28/95	9/27/95	STEW-FH	In progress
"	164 Salvage	11/ 4/97	2/ 9/98	COMM-T	In progress-ITM blwdwn
"	Sweet Pea Salvage	4/13/92	5/14/96	STEW-FH	Done-Dead POC/DF haz
"	Elk Horn Arrow	10/ 4/95	12/ 4/95	COMM-M	Done-Dead POC
"	220 PC	11/ 9/96	12/19/96	COMM-T	Done-POC sanit
"	Backwoods Decks	7/11/88	6/12/95	COMM-M	Done-ROW trees
"	Nickle Blow Salvage	7/31/96	11/14/96	COMM-T	Done-Blwdwn
"	Bothsides Pickup Sal	1/25/96	3/12/96	STEW-FH	Done-Rd blwdwn
"	96 Salvage	2/ 4/97	8/25/97	COMM-M	Done-Rd blwdwn
"	Barklow Salvage	2/ 4/97	8/25/97	COMM-M	Done-Rd blwdwn
"	Gate Salvage	2/ 4/97	8/25/97	COMM-M	Done-Rd blwdwn
"	CG Hazard	3/13/98	3/31/98	STEW-M	Done-CG haz trees
"	Barking Arrow	4/ 2/97	6/16/97		No log yet
"	BBerry Thin	5/ 7/96	10/ 8/96		No log yet
"	H & T PC Salvage	7/29/97	9/30/97		No log yet
"	3347 PC	7/29/97	9/30/97		No log yet
"	Starlight XVol	5/31/95	5/31/95		Add on vol-drop
"	Boulder Krab	/89	11/ 3/95		NOT NWFP
"	Elk Fork	/89	11/ 3/95		NOT NWFP

APPENDIX C

NORTHWEST FOREST PLAN MONITORING (FY 98)
(SISKIYOU NF)

Following is the list of timber sales AND their project category that WERE monitored.

<u>District</u>	<u>Sale Name</u>	<u>Project</u>	<u>Remarks</u>
Chetco	Sugar C/U F/W	COMM-T	Small Sale; Green firewood
Chetco	Nail Gun Salvage	COMM-M	Small Sale; Rd blwdwn
Galice	Firebreak Salvage	STEW-FH	Small Sale; Decks
Galice	Lone Drone F/W	STEW-M	Small Sale; Green firewood
Galice	Finley Overlook	COMM-T	Large Sale Thin/Group Sel
Galice	Waterfall Salvage	COMM-T	Small Sale; Thin
Galice	Down Soldier	COMM-M	Large sale;
Galice	Roadside Salvage	COMM-M	Small Sale; Rdside hazard
Gold Beach	Sprat Thin	STEW-LSR	Large Sale;
Gold Beach	2-T Thin	STEW-FH	Large Sale;
Gold Beach	M & M Vista Salvage	STEW-FH	Small Sale; Rdside blwdwn; LSR
Gold Beach	Nail Keg Salvage	COMM-M	Small Sale; Rdside blwdwn ;LSR
I.Valley	French Salvage	STEW-FH	Small Sale; Rdside Blwdwn
I.Valley	Full House	STEW-FH (COMM-T) (STEW-M)	Large Sale; Thin & Regen
I.Valley	Bucking Horse	STEW-M (COMM-T) (STEW-FH)	Large Sale; Thin & Regen
I.Valley	Caves Pick Up Salv	STEW-M	Small Sale; Rdside Blwdwn
Powers	Doe Swamp Thin	STEW-FH	Large Sale; Thin
Powers	Sweet Pea Salvage	STEW-FH	Small Sale; Dead POC & Rdside Haz
Powers	CG Hazard	STEW-M	Small Sale; CG Hazard

SISKIYOU NF TIMBER SALE MONITORING SUMMARY

	<-----WESTSIDE----->			<---EASTSIDE----->		<u>TOTAL</u>
	<u>Gold Beach</u>	<u>Chetco</u>	<u>Powers</u>	<u>Galice</u>	<u>Illinois Valley</u>	
Total Sales Available from which to Select Sales to Monitor (# of Large Sales):	7 (3)	10 (0)	12 (1)	12 (3)	17 (3)	58 (10)
Number of Sales to Monitor (# of Large Sales):	4 (2)	2 (0)	3 (1)	6 (2)	4 (2)	19 (7)
	(33%)			(70%)		

Following is a list of the sales, the number of available units in the sale and the number of units that will actually be monitored.

<u>District</u>	<u>Sale Name</u>	<u>Project</u>	<u>Units Available for Monitoring in Aug/Sept 1998.</u>	<u>Number of Units Selected to Monitor</u>
Chetco	Sugar C/U F/W	COMM-T	1 unit	1
Chetco	Nail Gun Salvage	COMM-M	2 units	1
Galice	Firebreak Salvage	STEW-FH	4 units	1
Galice	Lone Drone F/W	STEW-M	1 unit	1
Galice	Finley Overlook	COMM-T	4 units	2
Galice	Waterfall Salvage	COMM-T	1 unit	1
Galice	Down Soldier	COMM-M	2 units	1
Galice	Roadside Salvage	COMM-M	10 units	1
Gold Beach	Sprat Thin	STEW-LSR	No units avail	none
Gold Beach	2-T Thin	STEW-FH	6 units	1
Gold Beach	M & M Vista Salvage	STEW-FH	1 unit	1
Gold Beach	Nail Keg Salvage	COMM-M	2 units	1
I.Valley	French Salvage	STEW-FH	12 units	4
I.Valley	Full House	STEW-FH	8 units	2
		(COMM-T)		
		(STEW-M)		
I.Valley	Bucking Horse	STEW-M	4 units	1
		(COMM-T)		
		(STEW-FH)		
I.Valley	Caves Pick Up Salv	STEW-M	5 units	5
Powers	Doe Swamp Thin	STEW-FH	2 units	1
Powers	Sweet Pea Salvage	STEW-FH	7 units	3
Powers	CG Hazard	STEW-M	12 units	4
TOTAL UNITS AVAILABLE = 82 units				32 units (39%)

Following is a list of the sales and specific units that will be monitored.

<u>District</u>	<u>Sale Name</u>	<u>Project</u>	<u>Remarks</u>	<u>Unit(s)</u>
Chetco	Sugar C/U F/W	COMM-T	Small Sale; Green firewood	1
Chetco	Nail Gun Salvage	COMM-M	Small Sale; Rd blwdwn	2
Galice	Firebreak Salvage	STEW-FH	Small Sale; Decks	212, 688
Galice	Lone Drone F/W	STEW-M	Small Sale; Green hrdwd	1
Galice	Finley Overlook	COMM-T	Large Sale	1, 2, 3
Galice	Waterfall Salvage	COMM-T	Small Sale; Thin	1
Galice	Down Soldier	COMM-M	Large sale	2
Galice	Roadside Salvage	COMM-M	Small Sale; Rdside hazard	4, 7
Gold Beach	Sprat Thin	STEW-LSR	Large Sale; LSR	None avail
Gold Beach	2-T Thin	STEW-FH	Large Sale	6
Gold Beach	M & M Vista Salvage	STEW-FH	Small Sale; Rdside blwdwn; LSR	1
Gold Beach	Nail Keg Salvage	COMM-M	Small Sale; Rdside blwdwn: LSR	2
I.Valley	French Salvage	STEW-FH	Small Sale; Rdside Blwdwn	051, 440, 018
I.Valley	Full House	STEW-FH (COMM-T) (STEW-M)	Large Sale; Thin & Regen	31,32
I.Valley	Bucking Horse	STEW-M (COMM-T) (STEW-FH)	Large Sale; Thin & Regen	19
I.Valley	Caves Pick Up Salv	STEW-M	Small Sale; Rdside Blwdwn	all
Powers	Doe Swamp Thin	STEW-FH	Large Sale; Thin	15
Powers	Sweet Pea Salvage	STEW-FH	Small Sale; Dead POC/Rdside Haz	3, 5
Powers	CG Hazard	STEW-M	Small Sale; CG Hazard	eden valley, wooden rock, buck, daphne

APPENDIX D**TIMBER/SPECIAL FOREST PRODUCT SALE IMPLEMENTATION MONITORING (FY98)**

Following is an example of some different types of items that could be monitored, some suggested methodology, and potential data to be collected.

<u>MONITORING ELEMENT</u>	<u>METHOD</u>	<u>MEASUREMENT ITEM(S)</u>
<i>1. <u>Vegetation</u></i>		
A. Tree Density a/ a. Upland b. Riparian	Vari. radius plot Vari. radius plot	BA, TPA, dia. BA, TPA, dia, crown closure
B. Tree Species Composition -Upland & riparian	Vari. radius plot	Species
C. Tree Damage	Vari. radius plot	Type, severity
D. Leave Tree Quality	Vari. radius plot or observation	Form, decay, tree class, crown ratio, crown class
E. Windthrow	Vari. radius plot	TPA or total count
F. Green Tree Retention a. Scattered b. Clumps	Vari. radius plot Traverse; Fixed Plot	BA, TPA, dia. or total count Acres; Dia
G. Snag Retention	Vari. radius plot	Number, BA, TPA, dia, class, height, or total ct
H. Down, Woody Debris Retention	Fixed radius plot	Number, dia., length, class
I. Harvested Trees	Fixed radius plot	Number, dia.,
J. Tree Age (LSR only)	SampleAge (increment core)	
<i>2. <u>Soils</u></i>		
A. Harvest Unit Disturbance (mineral soil exposed) (skidtrails, firelines, skyline corridors, etc)	Fixed radius plot	% of area disturbed
B. Reveg. Success	Fixed radius plot	% ground cover/spp
C. Decompaction (subsoil tilling)	Fixed radius plot	Depth, root damage, revegetation

<u>MONITORING ELEMENT</u>	<u>METHOD</u>	<u>MEASUREMENT ITEM(S)</u>
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3. Riparian Areas

A. Width of riparian area	Laser rangefinder or tape measure	Width
B. Identification/protection of ROD drainages, wet sites, etc.	Observation	Number found/number protected

4. Prescribed Burning

A. Fire severity	Fixed radius plot	<u>Low</u> = Green or partially green overstory; understory partially to totally burned; spotty to completely burned forest floor; duff/litter consumption 0-25%. <u>Moderate</u> = Overstory partially green to totally burned; understory totally dead; generally black forest floor; duff/litter consumption 25-50%. <u>High</u> = Canopy generally dead; leaves and needles stripped; all smaller vegetation burned; black floor; duff/litter consumption greater than 50%.
B. Green tree mortality	Vari. radius plot	BA, TPA, species, dia
C. Plantability	Fixed radius plot	% of area
D. Slash piles	Observation	burned, unburned, consumption
E. Timeliness of burns for reforestation/slash disposal	Document Review	Time to burn from completion of yarding
F. Accomplishment	Document/Field Review	Acres/Tmt Type

5. Roads

A. Maintenance (miles of road)		
1. Waterbars	Observation	Ave spacing/size/ functioning/not functioning
2. Culverts	Observation	Number/plugged, partially plugged (how much), unplugged
3. Erosion vegetation	Observation	Cut/fill/road % coverage
4. Erosion	Observation	Type/location/size
5. Slumps	Observation	Type/location/size
6. Sediment delivery	Observation	Location/volume/where deposited
7. Ditches	Observation	Functioning/not functioning
8. Outslope/inslope	Observation	Functioning/not functioning
9. Winterization	Observation	Occurred/not occurred

<u>MONITORING ELEMENT</u>	<u>METHOD</u>	<u>MEASUREMENT ITEM(S)</u>
B. Road closures/treatments		
a. Obliteration (recontouring)	Observation	Miles
b. Decommission (restore natural drainage)	Observation	Miles
c. Closed (gates, berms, barriers, etc)	Observation	Miles
d. Road/landing ripping	Observation	Miles
C. RMO's achieved Observation		(see RMO for RD)
D. Wet weather use & POC	Observation	Evidence of wet weather use
6. <u>Sensitive Plants/Animals</u>		
Impacts	Observation of protection	Species/number/type
7. <u>Improvements</u>		
A. Installation of gates, camps, or other improvements	Observation	Number/type
B. Impacts to campsites, trails, water sources, roads, bridges, gates	Observation	Impact/type
8. <u>Site Cleanup</u>		
A. Firewood decks	Observation	Number, consumption
B. Garbage/debris	Observation	Type, amount
9. <u>Visuals</u>		
Visual quality objectives	Camera	Photo
10. <u>Planning Documents</u>		
A. Completeness LSR Assessments WS Analysis Regional Ecosystem Office Review	Document review	
B. Followthru (EA-Implementation)	Document Review Site visits	
11. <u>Archeological Sites</u>		
Impacts	Observation	Number/type/type of protection
12. <u>Noxious Weeds</u>		
Presence	Observation	Species, amount

Potential Elements to Monitor for Various Types of Sales

SALE CATEGORY & TYPE											
Category: Special Forest Products					Stewardship				Commodity		
Type of Project:	Fuel- wood ¹	Posts/ Poles	Misc; Boughs			Forest LSR	Misc.(Rec/WL/ Health			Comm./ Thin	Misc:Select/ Improv./Salv/
	1C	1A	1C	2Ac		1A-I	1A-H	1A-H	1A-E	1C	1A-H
	1G	1B	3B	5E		2A-C	2A-C	2A-C	2A	1D	2A-C
	1H	1C	5E	6B		3A-B	3A-B	3A-B	3A-B	1E	3A-B
	3A	1D	6B	10A-B		4A	4A-F	4A-F	4A	1F	4A-F
	3B	1E	8B			4B	5A-D	5A-D	4B	1G	5A-D
	4D	3A-B	9A			4D	6A-B	6A-B	4F	1H	6A-B
	5A	4D	10A-B			4E	7	7	5A-D	2A-C	7
	5E	5A				4F	8A-B	8A-B	2A	3A-B	8A-B
	6B	5E				5A-D	9	9	2B	4A-F	9
	8A-B	6B				6A-B	10A-B	10A-B	3A-B	5A-D	10A-B
	10A-B	8B				7	11	11	4A	6A-B	11
	11	9				8A-B	12	12	4B	7	12
	12	10A-B				9			4F	8A-B	
		11				10A-B		7		9	
		12				11			8A-B	10A-B	
						12			9	11	
									10	12	
									11		
									12		

Coding: LSR=late successional reserve;

¹ = Primarily handwork

APPENDIX E

MONITORING PROCEDURES

I. STAND EXAMS

A. Plot Location

1. Route and Plot Location

a. Starting Points (also see attached for route and plot marking)

-The starting point for the plot grid shall be accurately referenced (distance, direction, etc) to longer term features on landscape (such as road junctions). It should also be shown on the map for the unit to be examined. A person returning in 10 years should be able to relatively easily find this starting point reference tree.

-The starting point should be a tree with a pre-numbered aluminum tag nailed into it either at eye level or at the stump. This tag should be painted with white tracer paint facing the access route---ie road, trail, etc. The tree should also be flagged and marked with white tracer paint.

b. Location of Plot

-Move plot if location falls out of unit, on road or landing, in slash pile, etc. Record this information if this should occur.

-Always locate plots in an unbiased manner.

c. Plot Location Referencing

-Plots will need to be relocated in 10 years or so. Therefore, they need to be permanently monumented.

-Plot locations should be identified and numbered on a map of the stand or unit. The azimuth and distance to the first plot and subsequent plots should be identified on the plot sheets. The compass magnetic declination used should also be indicated. The distance between starting point and plots or between plots should be measured by use of a hip chain.

-The number of plots per stand/unit should be based on trying to achieve a 10% error at the 80% confidence level.

-Plots should be located within the stand/unit on a grid pattern. In order to determine the plot spacing:

$$\text{Plot spacing (chains)} = \frac{\sqrt{(\text{Acres} \times 10 \text{ sq chains/acre})}}{\# \text{ of Plots}}$$

-The plot center will be a 12" aluminum rod driven into the ground with all low growing vegetation cleared from it's immediate vicinity (brush, grass, etc). This rod should stick a minimum of 3" above the ground. Adjacent to this rod drive a 1"+ stick into the ground. Paint both the rod and the stick with the white tracer paint and attach flagging.

-Plot center shall be referenced by nailing pre-numbered aluminum tags to the 2 trees near plot center. Preferably these trees should be on opposite sides of the plot

center. These tags shall be attached to the reference tree facing the plot center and within 1 foot of the ground surface. This tag should be painted with white tracer paint as well as the tree which should have a large paint spot facing plot center near DBH. The tree should also be flagged.

-The species, DBH and tag number of that tree and the azimuth and distance from the plot center to the tree shall be measured and recorded on the plot card. The distance is from the plot center to the center of the reference tree.

-This same plot center is used for ALL variable radius or fixed area plots at this location.

B. Plot Measurement

1. Variable Radius Plots

- Only one BAF may be used for ALL the plots located in one stand or unit. The BAF used should result in an average of 4-8 trees per plot over the stand. The BAF used must be recorded.

- All "in" trees greater or equal to 5.0" DBH should be measured and the required information recorded- species, DBH, crown ratio, crown class, damage- type and severity (sq ft of damage or amount of cull), snag class (based on 7 stages of tree with 1 being live and 7 being decomposed --see attached.)

-Do not record any tree outside of unit.

2. 1/100th acre Fixed Plot

-These plots should be (11.8') in radius and count all trees (< 5.0 " in DBH)

-All conifer trees located within this plot should be measured and recorded---species, # of trees, DBH (if over 1") and height group (0-2', 2-4.5', 4.5-10', 10-20', 20-30', etc.

-The number of cut trees within this plot should also be counted and recorded.

-Do not record any trees outside of unit.

3. 1/4 acre Fixed Plot

-These plots should be 1/4 acre plots (58.9' radius). All down debris with a large end diameter of 6.0" or larger AND a minimum of 10 feet long shall be measured and recorded--piece number, large end diameter, length, decomposition class (5 classes where 1 is recently felled log to a 5 which is a log decomposed to basically organic debris in soil--see attached)

-For advanced decomposition class material, estimate the original diameter of log piece and record.

-All mineral soil exposure caused by management activities should be estimated as a percentage of the plot area. Do not include the following areas in this % --roads, landings, naturally occurring mineral soil, rock, water). Specifically mention these if they exist.

-An estimate of fire severity (if area was burned) within this plot should also be made based on the definitions of low, moderate and high identified on the Monitoring Data Sheet- see attached.

-In regeneration units, measure and record all the cut stumps or trees within the plot that are 7.0" in diameter or larger. Obviously stump diameters will be below DBH. All standing trees will be measured at DBH. This applies to BOTH the harvested area AND the green tree retention clumps.

-Do not record information on any trees, logs, etc that are outside of unit. Estimate the % of plot that is within unit and record this information, however.

APPENDIX F**MONITORING DATA SHEET**

Sale Name = _____ ; Unit No.=____ ; Acres=____; Date=____
 Monitoring Personnel=_____

STARTING POINTDirection/Distance to Plot #1

	Species	DBH	Tag #	Azimuth	Distance
Starting Point Tree:					

Azimuth (Plot # ____ to Plot # ____ = ____°; Distance=____ ft.; Slope Correction =____ ft
 Road Number (nearest Reference Tree)=____ ; Distance to Starting Point Tree from Intersection of
 Road #____ & ____ = ____ miles

PLOT CENTER REFERENCE INFORMATION

Plot # _____	<u>Plot Center to Tree</u>					
	Tree (Tag Number)	Species	DBH	Azimuth	Distance	Remarks
Tree 1=						
Tree 2=						

VARIABLE RADIUS PLOT (Magnetic Declination=____ **BAF**=____)

Species	DBH	Crown		Damage	Snag	Age	Crown Cover %
		Ratio	Class				
				Severity	Class	(LSR only)	Only Rip. Reserv

Plant Community = _____ ; Photo Numbers = _____

REGENERATION PLOT (Trees <5.0" DBH; 1/100 ac plot (11.8' radius))

Species	No. of Trees	DBH	Tree Height Group (0-2'; 2-4.5'; 4.5'-10'; 10-20'; 20-30')
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Number of Cut Tree Stumps in Plot = _____

